PENNSTATE

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| SOIL TEST REPORT FOR: | ADDITIONAL COPY TO: |
|---|---|
| JOHN JONES<br>JONES FAMILY FARM<br>GREENVILLE PA 22222 | SAM COOK<br>TOP GROW ENTERPRISES<br>111 ALFALFA RD<br>WATERTOWN PA 11111 |

| DATE | LAB # | SERIAL # | COUNTY | ACRES | ASCS ID | FIELD ID | SOIL |
|---|---|---|---|---|---|---|---|
| 06/11/2014 | S01-19627 | 55 | Centre | 40 | | Back 40 | |

| SOIL NUTRIENT LEVELS | | | Below Optimum | Optimum | Above Optimum |
|---|---|---|---|---|---|
| [1]Soil pH | 5.4 | | | | |
| [2]Phosphorus (P) | 40 | ppm | | | |
| [2]Potassium (K) | 175 | ppm | | | |
| [2]Magnesium (Mg) | 50 | ppm | | | |

**RECOMMENDATIONS:** *(See back messages for important information)*

**Limestone*:** 4000 lb/A for a target pH of 7.0. **Magnesium (Mg)** 2 lb/A

***Calcium Carbonate equivalent***

**Plant Nutrients:** ***(If manure will be applied, adjust these recommendations accordingly. See back of report.)***

| Year | Crop | Expected Yield | Nitrogen (lb N/A) | Phosphate (lb $P_2O_5$/A) | Potash (lb $K_2O$/A) | |
|---|---|---|---|---|---|---|
| 1 | Established Alfalfa | 5 T/A | 0 | 0 | 50 | *See ST2 for other crop recommendations* |

Apply fertilizer after first cutting or, for large recommendations split after first cutting and in the fall.
Apply 2 lbs boron per acre with the fertilizer.

| | | | | | |
|---|---|---|---|---|---|
| 2 Corn for Silage | 21 T/A | 150 | 50 | 50 | *See ST2 for other crop recommendations* |

A N credit for the previous Established Alfalfa crop should be subtracted from the base N recommendation listed above. Credits based on precent stand of the legume crop are as follows: less than 25 % stand -40 lb/A, 25-50 % stand - 80lb/A, greater than 50 % stand - 110lb/A
Use a starter fertilizer. (See Back)

| | | | | | |
|---|---|---|---|---|---|
| 3 Corn for Grain | 130 Bu/A | 130 | 30 | 0 | *See ST2 for other crop recommendations* |

Use a starter fertilizer. (See Back)

| ADDITIONAL RESULTS: | | | | | | Optional Tests: | | | [2]Trace Elements | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| [2]Calcium (ppm) | [3]Acidity (meq/100 g) | [4]CEC (meq/100 g) | % Saturation of the CEC K | Mg | Ca | Organic Matter % | Nitrate-N ppm | Salts mmhos/cm | *See back for comments* Zinc ppm | Copper ppm | Sulfur ppm |
| 1021 | 3.9 | 9.9 | 4.5 | 4.2 | 51.7 | | | | 4.2 | 1.7 | 14.0 |

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

## Recommendation Messages

**Enclosures**

**ST-2 Fertilizer Recommendation Table-** Guidelines for making recommendations for other crops and for adjusting for a different expected yield.

**ST-4 Interpreting Soil Tests for Agronomic Crops-**Explains the soil test report and provides additional information on the recommendations.

**Soil Nutrient Levels** Soil nutrient levels are given as parts per million (ppm) elemental P, K , and Mg. As a rule of thumb to convert ppm to lb/A multiply ppm x 2. The elemental results in lb/A can be converted to oxide forms using the following conversions: P x 2.3=$P_2O_5$, K x 1.2=$K_2O$, Mg x 1.6=MgO

| | | |
|---|---|---|
| **Below Optimum-**Nutrient is deficient. There should be an economic response to adding the recommended nutrient. | **Optimum-**Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range. | **Above Optimum-**The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal. |

**Recommendations** N,P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

**Limestone Recommendations** The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

**Magnesium** Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may results in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can results in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your fertilizations are properly balanced.

**Starter Fertilizer** Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. A N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

**Nitrogen** Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

**Manure** Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. Fore details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county agent.

**Very High Soil Test Levels** Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

Very high pH can results in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.

Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

**Zinc, Copper and Sulfur Results** The normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. Cu, Zn and S deficiencies are uncommon in PA, but may occur on soils testing below the normal range. Cu, Zn and S toxicities may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

| Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3) | | |
|---|---|---|
| Zn (ppm) | Cu (ppm) | S (ppm) |
| 1.1-9.4 | 1.2-5.5 | 10-25 |

**Distribution of Soil Test Results** Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current **Penn State Agronomy Guide** or the **AASL website**: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension agent.